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BULLETIN OF THE

TAYLOR SOCIETY

AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

Marketing Costs Study
Frank M. Surface

The Industrial Engineer's Responsibility to Management Today
Harold Vinton Coes

Third in the Applied Scientific Management Series—
The General Manager and Other Major Executives
King Hathaway

A Comment on "Purchasing Power and Wages"
By George E. Roberts

Engineering Societies Building
29 W. Thirty-Ninth St.
New York

FEBRUARY, 1933 VOL. XVIII, NO. 1

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The Bulletin in New Form

In this issue we try out a new form of BULLETIN which presents the same amount of reading matter in more compact form. We hope our readers will find it pleasing, or if they do not that they will write us their objections to it.

Index to Volume XVII

The printed index to Volume XVII has been bound into the center of this issue. By opening the binding staples the index may be removed and used for binding with Volume XVII, or separately stapled. The BULLETIN pages will be found to be consecutive when the index has been removed.

Comment

DR. SURFACE and his associates in the Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce have made a very real contribution to the science of marketing in the series of studies they have been conducting over a period of years on manufacturers' costs, wholesalers' costs and the costs of handling at retail. Their work is an excellent application of the Taylor principles to the field of commodity distribution. It will be seized upon as a practical aid by those industrialists and business men who see the importance of distribution in the present picture and are eager to find an intelligent solution to their problems. This presentation is couched in simple, non-technical, though quite specific, terms. With its illustrative charts it should serve as a guide to distributors of a wide variety of products in setting up their own system of compiling and comparing cost factors and thereby working out improved methods of distribution. While the discussion in this article is based on wholesalers' costs, the same principles can be applied in analyzing manufacturers' and retailers' costs. Those who have followed this plan have seen results in an improved relative position in the competitive market. Dr. Surface is confident that a really extensive adoption of the methods described in this article will repeat these results.

THE THIRD article in the series on "Applied Scientific Management" presents another specific guide to industrialists in listing the essential qualifications and tools of the effective general manager. At the same time Mr. Hathaway gives a clear picture of how these were evolved from Mr. Taylor's teachings. While every effective organization will not measure up to Mr. Hathaway's standards, it would be well for the best of them to check their practices against his requirements.

MR. COES sees in the present economic situation an opportunity for the industrial engineer to steer management toward a more enlightened policy. He believes that the business of the future will have to meet certain definite requirements and that the industrial engineer should help management to define these in their broadest aspects. He also sees consideration of the consumer as of increasing importance in the plans of industrialists.

THIS IS interesting in the light of the critical comment of a banker on Mr. Welch's material, which was presented in the October issue of the BULLETIN OF THE TAYLOR SOCIETY (p. 169), on the importance of restoring consumer purchasing power if the lost equilibrium from which we are all suffering is to be regained. Readers will want to have Mr. Welch's original article before them in going over Mr. Robert's criticism and Mr. Welch's reply to it. Mr. Welch's material and the other articles on Purchasing Power which appeared in the October BULLETIN have been the subject of lively discussion since they appeared and we are glad to begin in this issue to share with BULLETIN readers the interesting points of view that have been revealed. It can no longer be said that the BULLETIN confines itself to "cold" facts!

A BIT OF humor and philosophy in verse form is another unique contribution to this issue. When the New-Year mail brought forth this very different—and very pertinent—greeting from one of our British members we immediately resolved to share it with our readers.

Marketing Costs

A Method of Allocating to Individual Commodities

By **FRANK M. SURFACE**

Assistant Director, Bureau of Foreign and Domestic Commerce
U. S. Department of Commerce, Washington.

MANY students of marketing believe that the key to more efficient commodity distribution lies in the detailed study of distribution costs and operation and in the translation of those findings into the principles of management. Just as Frederick Taylor revolutionized production technique and management through greater attention to details, so it seems possible that the marketing technique of the future may be revolutionized by a similar attention to comparable details in that field.

During the last half dozen years the Bureau of Foreign and Domestic Commerce has attempted to make some contributions in this field through the development of practicable methods for determining the costs of handling individual commodities, serving individual customers and performing other individual operations in a merchandising establishment. These studies have included the manufacturer's distribution costs, the wholesaler's costs and the costs of handling commodities at retail. Out of these studies and those being carried on by other organizations, there is gradually being built up the theory and practice of distribution costing. For the most part this subject is still too new to have gained wide acceptance by marketing men—either independent consultants or those directing the marketing policies of individual companies. Many discussions with marketing men in various lines have led me to believe that it might be worth while to attempt a non-technical discussion of some of the methods of distribution-cost allocation.

The development of the theory and practice of distribution costing as used in the Department of Commerce has been largely the work of Mr. Wroe Alderson and a small staff working under his immediate direction. To these men belong the credit of pioneering work in this field. My own efforts here will be confined chiefly to the attempt to present one phase of this subject as simply as possible with the elimination of all unessential details.

For the present discussion, I shall confine my remarks to the allocation of costs to commodities in what may be regarded as a reasonably typical wholesaling establishment. By similar but somewhat different methods it is possible to assign costs to customers, from which studies some very important deductions can be made. Similar principles are also applicable to the manufacturer's distribution costs and to the retailer's costs. References to these are omitted in order to avoid complications.

Perhaps we can simplify our approach to the cost problem if we consider first just what a merchant does that involves costs. We may set down three things:

1. He maintains a place of business.
2. He handles commodities.
3. He serves customers.

All of the activities he carries on can be grouped about these three. Furthermore, since the maintanance of a place of business is associated with handling commodities and serving customers, its cost can be divided between the two. Hence, the two basic elements in merchandising are commodities and customers. All commodities do not cost the same to handle and all customers do not cost the same to serve.

Our problem, therefore, is to devise some practicable method of allocating the ordinary expense items of an operating balance sheet to commodities on the one hand and to customers on the other.

Certain costs accrue to commodities irrespective of customers, while certain other costs are incurred only because of serving customers. For these as well as for other considerations, the Department has divided marketing costs into three functional groups designated respectively as maintanance, movement and contact activities. These groups may further be divided into sub-groups. The number of such sub-groups would depend upon particular conditions and upon the degree of refinement judged necessary to give satisfactory results.

Maintenance activities are those concerned with keeping a place of business and a stock of merchandise. These are the costs of "offering for sale" and so long as the firm stays in business such costs accrue irrespective of whether a customer appears or a sale is made. Under this heading would be included the cost of rental or its equivalent, the care of the store or warehouse, cleaning, heating, lighting, etc., and also the cost of maintaining a stock of merchandise, i.e., interest, insurance, etc., on inventory investment. The two principal sub-groups under this heading are designated: investment and storage. The first of these sub-group costs may be allocated to commodities satisfactorily on the basis of the proportion of inventory value. Storage can best be allocated on the basis of the proportion of square feet of warehouse space occupied.

Movement costs are those connected with making a sale and moving the commodity into the hands of the customer. These include selling, waiting on customers, listening to demands, assembling goods, delivery, invoicing, checking, buying and replenishing of stock. All of these activities are made necessary through the advent of the customer.

The activities under this group may be divided into four main sub-headings. These are buying, selling, clerical work, and physical handling. Although conditions differ with different kinds of commodities, it may be said in general that the cost of buying and selling and the cost of clerical work vary with the number of times each commodity is sold. Therefore, for purposes of cost allocation these activities are grouped together under the term "order routine" and their costs are allocated to individual items on the number of times each item appears on a sales invoice. In this, as in other methods outlined here, there are often particular conditions in a given business or with particular commodities which make it necessary to use more factors than are considered here in order to arrive at satisfactory results.

Physical handling is the other group of movement activities which must be allocated. This might be done on the basis of weight or bulk, but a little consideration indicates that for most ordinary merchandise it is the number of units moved which is most important from a cost standpoint. Thus, for most packaged merchandise, it is the number of cases rather than the weight which determines the cost of handling. In other words, it is the time-consuming rather than the energy-consuming character that is most important. In our studies, wherever possible, we have attempted to use a standard handling unit—

defined as a case of merchandise small enough to be handled by one man and which is ordinarily shipped out without repacking. Commodities packed differently or those requiring unusual handling can be referred to this standard unit by means of ratios. These ratios can be determined satisfactorily by means of time studies or other special observations.

The third group of functional costs set up is designated as contact costs. They may be divided into two sub-groups: first, reimbursement costs or the cost of maintaining a return flow of money to balance the outward flow of commodities. This includes the cost of receiving payment and of collecting accounts. It should include all direct costs of credit and collecting, bookkeeping costs on accounts receivable, bad-debt losses, interest on money tied up in accounts, customers' cash discounts, etc. Reimbursement costs can be allocated to commodities on the percentage of total sales volume.

The second sub-group designated as promotional costs includes that portion of advertising and selling effort which may be regarded as institutional promotion apart from strictly commodity promotion. For most mercantile establishments, it would include nearly all of the advertising expense, that part of the buying expense caused by efforts to secure lower prices, loss leader sales where the object is to get customers to the store, etc. Promotional costs have as their object the securing of a larger volume of business and ultimately a larger gross margin. Percentage of total gross margin has, therefore, seemed as fair a basis upon which to assign these promotional costs to individual commodities as could be secured.

There have thus been set up the following six functional sub-groups of expenses, each with a separate factor for allocating to individual commodities.

CHART I

FUNCTIONAL CLASSIFICATION OF MARKETING COSTS

	Costs Allocated to Commodities on
Maintenance	
Investment	Average value of stock on hand
Storage	Square feet of floor space occupied
Movement	
Physical handling	Number of standard units
Order routine	Number of invoice lines
Contact	
Reimbursement	Per cent of total sales
Promotion	Per cent of gross margin

For special cases it is often necessary to use a larger or smaller number of expense sub-groups and somewhat different factors for assigning costs to commodities. The present factors have been found satisfactory with a number of diverse kinds of businesses.

Assuming these groups and factors satisfactory, we may inquire as to the exact steps that need to be taken in order to assign costs to individual commodities.

First, there are certain facts which must be compiled or obtained from the records of the company. We must have a satisfactory figure for the average inventory investment in each item. If annual inventories are available, these may be sufficient. If the amounts of particular items stocked vary widely at different times, this should be taken into account. It is usually better to average two regular inventories where possible.

The amount of floor space occupied by each commodity will usually have to be determined by special measurements in the warehouse. The average time consumed in various handling operations and the basis for determining the ratio necessary for converting various containers into standard handling units will also have to be obtained from special studies.

Frequency of order for each commodity can be obtained by counting the number of lines on the sales invoices in which each item occurs. Total sales volume, the number of units sold, and the gross margin can also be computed from the invoices for the period covered.

In addition to this, it is necessary to have a complete statement of all expenses for the period covered including estimated rent if the buildings are owned by the proprietor, an estimated salary for the proprietor if no formal salary is taken, interest on capital owned, etc.

The expense account will usually be in the form of an operating statement with various main headings such as administrative expense, selling expense, warehouse expense, etc. Under each of these main headings, there will be detailed records covering salaries, traveling expenses, equipment purchases, depreciation, interest, insurance, etc., etc.

The first problem is to convert these operating expense figures into terms of functional expenses such as investment, storage, handling, etc., which can be assigned to commodities. With regard to many items in the operating statement, there is no problem in assignment to the proper functional group. For example, warehouse rent goes under storage; delivery men's salaries under physical handling, etc. For other items, it may be necessary to divide a given operating expense between two or more functional groups. Thus, warehouse salaries may be partly for physical handling and partly for care of stock, the latter coming under storage. Salesmen's salaries are partly for commodity selling and assigned to order routine while part may be promotional. Time studies or conferences with officials may be used to decide these points and determine an equitable assignment.

With the details eliminated, the final set-up might be similar to that given in Chart II, the data for which are taken from an actual case studied by the Department of Commerce, many of the details of which have been published in "Problems of Wholesale Electrical Goods Distribution," by Wroe Alderson and Frederick Haag. (Bureau of Foreign and Domestic Commerce, Distribution Cost Studies, No. 9, 1931.)

In this case a wholesale firm doing an annual business of about $300,000 had total expenses of $50,500 divided in main operating headings as shown in the first two columns of the table. The remaining columns give the percentage allocation of these operating expenses under the six functional groups. It will be noted that 89.91 per cent of the total expense could be directly allocated to the functional groups. The remaining 10.09 per cent consisting of office and administrative expenses could not be distributed directly, and these have been assigned to the respective groups in the same proportion as the total of the directly distributed expense.

In the bottom line of the chart, the percentage figures are reconverted into dollars, thus giving a complete redistribution of the $50,500 of total expenses in terms of the six functional groups.

We are now ready to assign these expenses to individual commodities, and this assignment is carried through for two items in Chart III. For example, investment costs were to be assigned to commodities on the basis of the proportion of inventory value which a given commodity formed of the total inventory. Item A represented 3.41 per cent of the total average inventory of the firm. This percentage applied to the $9,206 of total inventory expense gives $314 as the invest-

CHART II.

ALLOCATION OF OPERATING EXPENSES TO FUNCTIONAL GROUPS.

Operating Expense Headings	Total Expense		Percent of total expense by functional groups					
	Dollars	Percent of total	Investment	Storage	Physical Handling	Order routin	Reimbursement	Promotion
Financial expense	$14,746	$29.20	8.39	-	-	-	20.81	-
Selling expense	16,024	31.73	-	-	-	22.79	-	8.94
Buying expense	1,757	3.48	2.31	-	-	1.17	-	-
Warehouse expense	9,585	18.98	4.92	6.04	8.02	-	-	-
Delivery expense	2,904	5.75	-	-	5.75	-	-	-
Office and administrative expense (directly distributed)	389	.77	.77	-	-	-	-	-
Total Distributed Expense	$45,405	89.91	16.39	6.04	13.77	23.96	20.81	8.94
Undistributed office and administrative expense	5,095	10.09	1.84	.68	1.54	2.69	2.34	1.00
Total Expense (Percent of total	-	100.00	18.23	6.72	15.31	26.65	23.15	9.94
(Dollars	$50,500	-	$9,206	$3,394	$7,731	$13,458	$11,691	$5,020

ment expense for this item. Item B, on the other hand, represented 12.37 per cent of total inventory value, and by the same method it is found that the investment cost for this item is $1,139.

In the same manner, it is found that Item A occupied 18.33 per cent of the warehouse space which translated in dollars represents a storage cost chargeable to this item of $622. Item B, on the other hand, with only 8.55 per cent of warehouse space had a storage cost of only $290.

By the same methods, the other group expenses are assigned to these commodities enabling a total distribution cost to be compiled for each item. As shown, the total annual cost of handling Item A was $4,293 or 8.5 per cent of total expenses of the business. For Item B, the total cost was $4,838 or 9.58 per cent of the total cost incurred by the firm.

We are now in a position to compare these cost figures with the total sales and the gross margins for the respective items and to determine the net profit or loss on each. These comparisons are given in Chart IV. Here it will be seen that Item A with sales of $36,720 or 12.24 per cent of total sales had a gross margin for the year of $4,275. Expenses for this item, however, amounted to $4,293 as determined in Chart III and, hence, there was a net loss of $18 on that commodity. Item B, on the other hand, had a smaller sales volume of only $29,820 or less than 10 per cent of total sales. Its gross margin was $6,110 against which we have allocated expenses of $4,838 leaving a net profit of $1,272 or 4.27 per cent of its sales value.

The figures on these two items indicate that while profit relations for Item B are apparently satisfactory, those for Item A are unsatisfactory. For this latter commodity, either the gross margin needs to be increased or the expenses need to be reduced. By tracing back to the particular expenses which run up the total costs of handling such an item, it is frequently possible to find ways of making savings which will turn a losing commodity into the profitable column. At least such an analysis serves a notice on the management that all is not well with particular commodities, some of which, as in the case of Item A, may be important volume producers. Once this condition is clearly recognized, it is usually possible for the management to take steps to correct them to some extent at least.

It is my hope that the preceding presentation may have simplified for some people the process to be gone through in distribution costing. The process is not nearly so difficult as many firms have supposed. While it requires at the start a number of factors not ordinarily compiled, these are all readily obtainable. Once the system is set up, the compilation of the costs becomes largely routine which can be handled for the average firm with very little added expense. It is a type of information which the distributor of the future is going to find absolutely necessary, and those who are making use of it today are finding themselves in an advantageous position compared with their competitors.

The present discussion has related entirely to the distribution costs of the wholesaler. The same or similar principles apply in the case of the distribution costs of the manufacturer and of the retailer. There are, of course, some differences in details and in the factors used.

Paper presented before a meeting of the Taylor Society on Marketing Costs, arranged by the American Marketing Society, New York, December 9, 1932.

CHART III.

ALLOCATION OF FUNCTIONAL GROUP EXPENSES TO INDIVIDUAL COMMODITIES.

Functional Expense Groups	Factor used in allocating costs to commodities	Total expense to be allocated (from chart II)	Item A		Item B	
			Percent which Item A forms of total of each allocating factor	Total Allocated Expense for Item A	Percent which Item B forms of total of each allocating factor	Total Allocated expense for Item B
Maintenance						
Investment	inventory value	$9,206	3.41	$314	12.37	$1,139
Storage	warehouse space	3,394	18.33	622	8.55	290
Movement						
Physical handling	no. of standard units	7,731	8.82	682	13.88	1,073
Order routine	no. of invoice lines	13,458	6.06	815	4.17	561
Contact						
Reimbursement	Percent of total sales	11,691	12.24	1,431	9.94	1,162
Promotion	Percent of gross margin	5,020	8.54	429	12.21	613
Total Expense		$50,500	-	$4,293	-	$4,838
Percent of total expense		100.0	-	8.50	-	9.58

CHART IV.

NET PROFIT OR LOSS BY COMMODITIES.

	Sales		Gross Margin			Expenses			Net Profit.	
	$	Percent	$	Percent of gross margin	Percent of total sales	$	Percent total expense	Percent total sales	$	Percent total sales
Item A	$36,720	12.24	$4,275	8.54	11.64	$4,293	8.50	11.69	-$18	-0.05
Item B	29,820	9.94	6,110	12.21	20.49	4,838	9.58	16.22	1272	4.27
Total	$300,000	100.00	$50,040	100.00	16.68	$50,500	100.00	16.83	-$460	-0.15

Applied Scientific Management

III. Organization: Functions of Major Executives, Especially the General Manager

By **KING HATHAWAY**
Consulting Engineer, New York

THE FOUR principles of scientific management formulated by Taylor have become to me living, vital things rather than so many words expressing abstract ideas or theory. I have found them a guide to conduct in management and a check upon the fundamental soundness of plans and activities. Such a check is of the greatest importance in working out the plan of organization and the methods, or system, for the application of scientific management in a company. It was only after years of experience with scientific management that the full significance of these principles came to me, and I venture to say that a very small percentage of those who have read them have even a glimmering of their meaning. As Taylor stated them, these basic principles and the examples of their application were directly associated with productive or manufacturing activities, but they are so fundamental that with little interpretation and change in wording they become equally applicable to any and all other branches of business. (See page 8 of the Taylor Society book, "Scientific Management in American Industry," for the principles as enunciated by Taylor. On page 10 there is a restatement in broader terms by Dr. H. S. Person.)

The second of these four principles sets forth as a necessity to scientific management "The scientific selection and training of the workman." Now if it is important that this principle be applied, and almost anyone will agree, in the case of the rank and file of workmen, and going a step farther, to the next higher level, the foreman in the shop and planning department, *how much more important is it that it be applied in the case of the major executives?* And yet in many if not most organizations, the selection of men to fill major executive positions, except in the case of engineers whose function is such as to make obvious the need for specialized training, is largely decided on considerations other than the possession of qualifications and training essential to the efficient handling of the job.

It is not uncommon to find chief executives, whether they are called presidents or general managers, assuming that position of greatest responsibility with only the most superficial previous experience in any branch of their particular business, or even in business. Their sole claim to the job frequently lies in the fact that they hold financial control of the company. Nor are cases uncommon in which men are placed in major executive positions or even made presidents of companies solely as a consequence of family or social connections. Even when individuals have advanced from within the organization selections are too often made without due regard to fitness. Owner management was the common and natural thing when the heads of business were frequently the founders, men who had developed the business or had developed with it. Or they were the sons of the founders and had been subjected to rigorous apprenticeship in all its branches. Ownership may give one the right to assume the function of chief executive, but it certainly is not a guarantee of the personal qualities and training essential to a proper handling of the job. All things being equal, one has no quarrel with owner management. There is much to be said for it provided the owner is qualified, and this is equally true with respect to the filling of major executive positions by sons, relatives or friends, for the reason that those who own the business may have a greater confidence in their loyalty and integrity than they might have in others. If they do not possess the requisite qualifications and training, however, the chances are against the continued success of the business. One does not have to look far to find plenty of companies that have passed out of the picture because of failure to apply the principle of proper selection and training in choosing major executives. Nor does one, particularly if he is a banker, have to look far to find companies still alive, whose salvation, for the same reason, is a doubtful matter.

In the main, the major executive functions should be filled from within the organization, as vacancies occur. And this is of course true of all functions down the line. The ideal situation would make it possible, when a vacancy in the position of general manager occurred, for example, to step the employes up all along the line. This would make it necessary to hire only a new office boy or apprentice. Not only should there be a plan of advancement and an understudy for every position, but there should be a definite plan of training to fit men for each major executive position.

Some Qualifications for a General Manager

The general manager should be an all-round man. He should possess those qualities of leadership which will enable him to inspire his organization. His character must be such as to command respect; he must have the courage to make decisions and take actions in the best interests of the company even though he may sometimes very much dislike them. He must be sympathetic, courteous and kindly in his relations with members of his organization, and should possess the patience and tact combined with the right degree of firmness, to guide their actions along right channels and to correct them when they go wrong. He must have the perseverance to insure their carrying out instructions and conforming to policies intelligently and effectively. He must be open minded but not vacillating. And he must be entirely fair and just. His function is largely one of co-ordinating the activities of the major functions of the business, of foreseeing trends and checking those which may be harmful. He should maintain contacts with outside agencies and developments which may have a bearing on his business and affect the shaping of its policies and plans of action. He should act as the flywheel that maintains the even flow of power and momentum of the machine and as the governor that prevents the machine from running away. It is as important that he see that the organization keeps its feet on the ground as it is that he provide the encouragement, the guidance and the stimulus necessary to orderly progress and sustained interest. In other words, he must, like a good horseman, know how to apply the curb as well as the spur, each with the gentleness, which is none the less firm, upon which smooth and steady progress depends.

It has been said that the capable managers are "born, not made." This is of course true in a limited sense, as it is with respect to any line of human endeavor. He must possess those native qualities of intelligence, temperament, energy, will-power and integrity which are necessary. Beyond this, managers are made by education and experience. Now let us enumerate the things with which he is not born but must acquire: (1) A knowledge of the workings of economic laws, particularly as they affect the company's business. This involves markets, sources of supply and economic trends. (2) A knowledge of what constitutes safe and sound financial practice. (3) A knowledge of the company's products, the materials that go into them, the processes that are involved in their manufacture, the equipment best suited to the processes, the uses served by the products and the potential demand, or the power of the markets to consume or absorb such products. (4) A knowledge of the character or extent of competition in the company's field. (5) A knowledge, with respect to the company's internal mechanism, of its own system of accounting. This should enable him not only to read intelligently the various reports and statements but to visualize what is back of them. In other words, he should not be hopelessly dependent on the professional accountant within or outside his organization. In a lamentable number of cases men at the head of important companies are so ignorant of their own accounting methods that they could not follow a transaction through their books, nor could they find or understand any desired information without assistance. What I have said with regard to the company's accounting system applies with almost equal force to the other elements of managerial mechanism described in my first article as essential to the complete management plan. (See BULLETIN OF THE TAYLOR SOCIETY, Vol. XVII, No. 5, October, 1932, p. 160.) Such a knowledge is not at all impossible, nor is it incompatible with Taylor's views on detail, which I quote at another place. It is to the general manager what a knowledge of mathematics, strength of materials, dynamics, engineering conventions, etc., is to the chief engineer, who may not personally make detailed application of such knowledge but who must properly supervise the work of designing engineers and draftsmen. (6) A knowledge of the art of management. By this I must imply what is known as scientific management, for the simple reason that it presents, imperfect as it may be, the only philosophy having a definite set of principles, a plan of organization based thereon, together with a definite technique and adaptable system which includes all activities pertaining to the business. It also provides that the various elements shall be so designed, fitted together and coupled up as to constitute a harmonious and complete mechanism of management, calculated to facilitate in the greatest possible degree the operation of the business.

In respect to the art of management, let me quote from "Shop Management" (p. 63):

> Modern engineering may almost be called an exact science; each year removes it further from guess work and from rule of thumb methods and establishes it more firmly upon the foundation of fixed principles.
>
> The writer feels that management is also destined to become more of an art, and that many of the elements which are now believed to be outside the field of exact knowledge will soon be standardized, tabulated, accepted and used, as are now the many elements of engineering. Management will be studied as an art and will rest upon well recognized, clearly defined and fixed principles *instead of depending upon more or less hazy ideas received from a limited observation of the new organizations with which the individual may have come in contact.* (Author's italics)

That the art has developed to a considerable degree is a fact, but it is also a fact that few men at the head of industry are aware of its existence or have felt that it might be as worthy of their serious study as engineering or any other profession. If they had any knowledge of the development of such an art, few have felt personally that they might learn anything by studying it. As a matter of fact, under the prevailing type of management the chief executive is in many cases so harassed and his time so taken up with the multifarious problems and masses of detail with which he must cope that he has little chance for study, even if he is disposed to do it.

On this point let me again quote from "Shop Management" (pp. 126-127):

> What may be called the "exception principle" in management is coming more and more into use, although, like many of the other elements of this art, it is used in isolated cases, and in most instances without recognizing it as a principle which should extend throughout the entire field. It is not an uncommon sight, though a sad one, to see the manager of a large business fairly swamped at his desk with an ocean of letters and reports, on each of which he thinks that he should put his initial or stamp. He feels that by having this mass of detail pass over his desk he is keeping in close touch with the entire business. The exception principle is directly the reverse of this. Under it the manager should receive only condensed, summarized, and *invariably* comparative reports, covering, however, all the elements entering into the management, and even these summaries should all be carefully gone over by an assistant before they reach the manager, and have all the exceptions to the past averages or to the standards pointed out . . . thus giving him in a few minutes a full view of progress which is being made, or the reverse, and leaving him free to consider the broader lines of policy and to study the character and fitness of the important men under him.

If the general manager is to be effective he must have tools to work with. He must not be dependent upon incomplete, vague and often unreliable information which has been given offhand or hurriedly assembled as engineers in a situation may demand. He needs facts, and these should come to him in an orderly and usable shape. They should be presented in the form of regular reports, compiled as a part of his system of management, rather than haphazardly as some unfavorable circumstance may suggest. While these reports, as Taylor said, should be condensed, summarized and supplemented with explanations by some one else, perhaps the comptroller, the system back of them should be such as to make the supporting detail readily available.

A chief executive may be helped or hampered by his board of directors. Not infrequently it is one of his principal problems to keep his board from taking action that may be contrary to the best interests of the business. In a large measure the actions of the board must be guided by the chief executive. Much depends upon the presentation of facts regarding the condition and operation of the business in such a way as to point to the right course of action and carry conviction. The reports mentioned will be of the greatest assistance to the general manager in this respect. It may not be amiss at this point to quote Taylor's views on how a board of directors should be organized, how it should function and its relations to the chief executive. In a lecture at Harvard, he said:

> Usually the board of directors consists of men who are elected because they own a large part of the stock of the company, or because they represent others who own this stock. They *should* be selected, however, not because of ownership of stock but mainly because of their especial knowledge and experience in some one or more of the broad sections which together make up the business. For instance, one man should be selected for his financial knowledge, another for his general knowledge of the subject of management, a third for his technical knowledge of the needs of the trade and general knowledge of the selling side of the business, a fourth, perhaps, for his legal knowledge, and yet another for his engineering knowledge which would fit him to direct progress in this

line. A board of directors consisting of specialists of this kind is vastly more efficient and better able to manage the business, even although they may personally represent but a small part of the financial holdings, than the boards as usually constituted.

The president of the company, or the chairman of the board of directors—it is a matter of name merely—should virtually be the king of the whole business, and should lead his board of directors rather than be a tool to be guided by them in detail; and when it becomes impossible for the president to lead in carrying out the general policy of the board, another man should be selected for the head of the business who is in harmony with their wishes and competent to lead them.

Now let us consider the reports which the general manager should regularly receive as guides in the conduct of the business. These reports should show:

1. *A daily statement of cash and related transactions.* This should show:

a. The previous cash balance, receipts, disbursements and the remaining balance in each bank in which the company maintains an account.

b. Customers' orders, the previous balance, orders received, orders shipped and the remaining balance of unfilled orders. If necessary this may be shown for each of the major classes of product.

c. Accounts payable, the preceding balance, reductions by cash or other credits, additions and the remaining balance.

d. Notes payable (in the same manner as the foregoing).

e. Accounts receivable (in the same manner as the foregoing).

f. Notes-receivable (in the same manner as the foregoing).

g. Purchases, the previous balance of unfilled purchase orders in dollar value, additional orders issued, reductions by goods received and invoiced and the remaining balance. If desirable this may be made to show goods in transit.

This group of reports should be on the general manager's desk at an early hour each morning in a form so devised as to be in the main self checking. It should also show such things as cash requirements to meet payrolls and other obligations for designated periods in advance.

2. *A weekly statement of plant operations.* This report should be so devised as to enable the general manager to see almost at a glance whether or not the plant is being operated at a rate compatible with the needs of the business. It should show in terms comparable with sales and shipments the balance of uncompleted production orders ahead in the plant, the production orders released for manufacture during the week and the remaining balance of work ahead of the plant. If orders are being put into the plant at a more rapid rate than sales are taking place, inventory inflation will in all probability result. If orders are being completed at a more rapid rate than sales it will mean one of two things. Either the plant will soon be out of work, if production orders are being put in at a rate corresponding to sales and completed at a more rapid rate, or, if they are both being put in and completed at a more rapid rate than sales, increased inventories will result. On the other hand, if the report shows that orders are being put into the plant at a lesser rate than sales and if customers' orders are being filled promptly, there must result a decrease in inventories. If the excess cannot be shipped out of surplus inventory, deliveries must suffer.

A simple report like this enables comparison of the rate of plant operation with sales and makes it possible for the general manager to foresee the need for speeding up or slowing down the tempo. Had these reports been a common practice many companies might have avoided the headache that accompanied their awakening to the fact that their inventories were far too large for their diminished volume of business. This might have meant an avoidance of the sudden drastic reductions in working forces which have made the depression more acute.

By the simple expedient of definitely fixing limits for productive labor payrolls in the proportion that they bear to the cost of sales, the general manager can control inventories of manufactured goods and cause them to rise or fall as the situation demands.

This report should also enable the general manager to see whether or not the working force is being adjusted from week to week in proportion to the amount of work ahead of the various departments concerned, either directly or indirectly, with the manufacturing of the company's products. For this purpose it should show, for each department or major producing unit:

a. The number of man- and apparatus-hours ahead.

b. The time that it would take with the existing force and facilities to complete the work ahead of each department.

c. The increase or decrease in the balance of work ahead of each department since the previous report.

d. The number of employes and the amount of the payroll in each department, compared with the previous report.

The preparation of such a report, presenting the facts accurately, is a comparatively simple matter in a plant operating under a complete application of scientific management, as I outlined it in my first article in this series. In the absence of such an application it is not so easy, except in the case of a very simple business.

Reports similar to those described may also be established to cover various other activities, if the information is not provided by the regular monthly reports of the accounting department or if for some reason it is desired in another form at intervals. In my next article the regular monthly accounting reports will be discussed. Reports covering sales and other activities will be discussed in the articles dealing with these activities. Functions of major executives other than the general manager will be taken up in due course.

This is the third of a series of articles which began in the October issue of the Bulletin of the Taylor Society.

Purchasing Power and Wages

A Critical Review of Mr. Welch's Article in the October Bulletin

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SEVERAL months ago my attention was called to an article in the October BULLETIN OF THE TAYLOR SOCIETY, entitled "Purchasing Power and Wages," by Emmett H. Welch, Research Associate, Industrial Research Department, University of Pennsylvania. Observing a number of serious errors in the statistical statements I thought it worthwhile to write to a member of the editorial staff of the BULLETIN about them. In this letter I said that I had always held the Taylor Society in high esteem, as an organization devoted to the promotion of industrial research and the development of higher efficiency in the industries, and was prompted by the feeling that it should not lend the prestige of its name to the circulation of misrepresentations. In response I received a courteous letter from the Associate Editor stating that my comments had been submitted to the author and that the latter proposed a revision as per sheets enclosed. An examination of the proposed revision showed that it did not meet the criticism, and a re-examination revealed further grounds for criticism. I then wrote and more fully stated my objections to the article and was asked to prepare an article for the next number of the BULLETIN. In the meantime I had observed in newspaper reports from Geneva that the Welch article had been the subject of an extended discussion in a meeting of the labor section of the League of Nations, and also that it had been the subject of a leading editorial in the *Christian Science Monitor* of December 29. In both instances the article evidently obtained consideration on account of its appearance in a publication of the Taylor Society. With my first reaction thus strengthened, I accepted the invitation to prepare this article.

Mr. Welch's article has a double thesis: (1) That wages should be maintained through a period of business depression with the object of maintaining the purchasing power of the wage earners, and (2) that excessive profits, or failure to pay higher wages during the years 1923-29, and their investment for increasing production had thrown production and consumption out of balance and brought on the depression.

Obviously these are important propositions and anything appearing on them in the BULLETIN OF THE TAYLOR SOCIETY would naturally receive respectful attention. Presumably it would be accepted, at least so far as the statistical statements were concerned.

The article is illustrated by several charts. Of these my criticism is directed against Chart V on page 175. Three lines on this chart represent the course of the aggregate dividend-and-interest payments by corporations, aggregate corporate-capital flotations and wage payments in the manufacturing industries from 1923 to the fore part of 1932. They are supposed to afford a ready means of comparison.

The index of capital returns, based on an average for the year 1926 as 100, shows a rise of 172.8 per cent for the average in 1929, or an increase of nearly 73 per cent in the period 1926-29. This index is based on the amount of dividend-and-interest payments compiled by the *New York Journal of Commerce*, and reported, without assuming any responsibility, by the Standard Statistics Company.

Inquiry of the *Journal of Commerce* reveals that it has simply compiled these figures from year to year as they were made public by several corporations without any representation that the figures from year to year were for the same companies or for the same number of companies. When the *Journal* began to compile these figures, about 150 companies were reporting; at present the figure is approximately 1500. My informant in the offices of the *Journal of Commerce* ventured the opinion that in the year 1926, the year chosen as 100 in the chart, the number of companies reporting was about 40 per cent of the number now reporting. No doubt the larger companies were included in the figures for the earlier years, but even their figures have been altered considerably as a result of mergers. It is evident that the *Journal of Commerce* never contemplated that the figures would be used as a basis of comparing the total dividend-and-interest payments of all corporations over a period of years. Their use for that purpose and the arguments based on their use in the text of the article are, therefore, unwarranted and misleading.

In the revision submitted by Mr. Welch in response to my first letter of criticism, he had changed these index numbers to correspond with the figures for corporation returns reported in "Statistics of Income," published by the United States Treasury, and the 73 per cent increase was reduced to 34. However, he rather naively called attention to the fact that the "only difference was in the magnitude rather than the direction of the movement." The official figures of net incomes of all manufacturing corporations, at least to 1929, were available before the original article was published and there is no excuse for not using these, or at least checking by them, instead of newspaper reports of interest-and-dividend payments. Moreover, interest payments are an item of expense, not significant of profits, and to use newspaper reports of dividend payments which did not purport to be complete or comparable from year to year, is proof of careless methods.

However, that is not all there is to say about these index numbers and the chart line representing them. Although ostensibly offering a comparison of the trend of interest-and-dividend payments with wages, the wage line is for wages in manufacturing industry only, while the interest-and-dividend line represents such payments by corporations of every description, including public utilities, investment trusts, holding companies, etc. The organization and rapid expansion of these latter were among the outstanding features of the period, and their own payments of dividends and interest came largely from income received in the same form. A substantial duplication in the figures is the result. If these financial and other non-industrial groups are excluded, the combined interest-and-dividend payments of all manufacturing industry increased from $3,124,000,000 in 1926 to $3,862,000,000 in 1929, or 21 per cent. It is well known that this increase was by no means uniform but was largely concentrated in the steel, automobile and chemical industries.

Nor is this all that should be said about the alleged increase of dividend-and-interest payments. It resulted from an increase in the volume of business done by the corporations. While there was an increase in the aggregate of profits, there was practically no increase in the percentage of profits on the turnover, because selling prices to the public were falling. The following table shows the gross volume of sales, net income and percentage of net income to sales for all corporations engaged in manufacturing in each year from 1923-29, inclusive. The figures are taken from the official "Statistics of Income."

(In Millions of Dollars)

Calendar or Fiscal Year	*Gross Income*	*Consolidated Net Income*	*Per Cent Net on Sales*
1923	56,221	3,086	5.48
1924	53,911	2,334	4.33
1925	60,830	3,154	5.18
1926	62,495	3,124	5.01
1927	63,723	2,580	4.05
1928	67,273	3,366	5.00
1929	72,132	3,862	5.36

These figures refute the representation that in the years following 1926 the profits of corporations engaged in manufacturing represented an increasing and abnormal share of the proceeds of the industries and thereby restricted the purchasing power of consumers. The fact is that at that time the industries were commonly complaining of "profitless prosperity."

Furthermore, during this period the aggregate net worth of this group of corporations was increased from $46,273,000,000 to $52,695,000,000, through the investment of additional capital and the retention of earnings, and through the change of large numbers of enterprises to the corporate form of organization. The percentage rate of return of net income on net worth, represented by preferred and common-stock and surplus account, increased from 6.75 per cent in 1926 to 7.34 per cent in 1929, or by less than one-tenth. An increase in this percentage would naturally result from doing a large volume of business on a relatively smaller capital, and was without cost to the public.

Another thing: In comparing aggregate interest-and-dividend payments with aggregate wage disbursements it must be considered that fluctuations in a company's profits from year to year may be very different from fluctuations in its volume of business or in the aggregate of its payroll. Profits are a comparatively narrow margin upon the total volume of business. Under favorable conditions they may rise more rapidly than the volume of the business or the aggregate of payrolls, and under unfavorable conditions they may fall more rapidly. An average profit of 5 per cent on the volume of business may rise to 10 per cent, or fall from 10 to 5, under changing conditions in production, trade and markets and thus effect a 50-100 per cent change with a comparatively small change in turnover. Mr. Welch takes no account of the greater variability of profits as compared with the total volume of business or wage payments.

To sum up, there is no propriety or validity in the comparison which is sought to be made by this line of the chart. In so far as any dividends are concerned, it represents an increase in the margin of profit in years when the industries were favored with an exceptional volume of business. Everyone familiar with business affairs knows that the net results of a year's business are very much affected by whether or not the last 10 or 15 per cent of capacity is employed.

The chart line representing capital expansion is based on the amount of new capital issues as compiled by the *Commercial and Financial Chronicle*, and is supposed to support the claim of excessive profits and excessive increase of productive capacity. This line also is based on figures for all kinds of corporations. Consideration should be given to the fact that during these boom years an important part of new flotations was not for the purpose of providing funds to increase production but for the formation of investment trusts and holding companies, whose activities were in the main confined to the buying of outstanding stocks of well-established companies for investment or speculative purposes. Moreover, the capital thus raised was largely obtained through credit inflation, and did not represent the investment of saved income accruing from the operation of the industries, as the article implies. In 1929, of the net total of $9,174,000,000 of capital issues for all purposes, as compiled by the *Chronicle*, $3,712,000,000, or approximately 40 per cent, are classified as investment trusts and miscellaneous companies. Mr. Welch does not bother to discriminate in matters of this kind.

So much for Chart V and its lines set up for comparison. It is evident that none of the several sets of figures bears any definite or significant relation to the others. They are not comparable and prove nothing.

I wish now to refer to Charts VII and VIII, given to show changes in the relative position of certain factors in industry in the periods 1899-1914 and 1914-29. So far as I know, these charts make a true showing. It is known that from the year 1900 farm products and raw materials were gaining relatively over wages and "value added by manufacture," with selling prices in between.

The situation in the period 1899-1913 and the later years to 1929 is described in the new volume recently issued by the National Bureau of Economic Research, Inc., entitled "Economic Tendencies, Aspects of Pre-War and Post-War Changes," prepared by Professor Frederick C. Mills, of Columbia University. Professor Mills says of the period 1899-1913 (p. 68):

> Summarizing and contrasting price and production movements, we have seen that the period immediately preceding the World War was marked by an increase in the volume of agricultural production (in raw and processed form) at a rate approximately equal to the rate of growth of population. The output of non-agricultural industries was growing at a much more rapid rate. Among prices these tendencies were reversed. The terms of exchange between agricultural and non-agricultural industries were being altered to the distinct advantage of the former. The average real price per unit of agricultural products (that is, the purchasing power of such products in terms of all commodities at wholesale) was increasing at a rate of 0.7 per cent per year. Their purchasing power in terms of non-agricultural products was increasing at the rate of 1.3 per cent a year. This change was accompanied by corresponding declines in the purchasing power of the products of non-agricultural industries. These tendencies contributed to a definite improvement in the status of the farmer.

This illustrates the fundamental importance of equilibrium in industry and of the truth that exchange relationships between different groups of the economic system are more important to trade and employment than uniform changes in the general price level.

The war reversed the pre-war situation. By cutting off exports of foodstuffs and raw materials from Russia a great stimulus was given to production in these lines everywhere outside of Europe, and an unlimited and imperative demand for manpower caused a phenomenal rise in wages. Mr. Welch now insists that wages should be maintained regardless of the fact that the war stimulus has caused the price of these products to decline to approximately one-half of their pre-war level and thereby deprived the producers of most of their purchasing power. At the same time there has been a reduction in the cost of living of wage earners and the insistence of important groups of the latter upon maintaining their wage advantage has been the principal cause of unemployment. Thus has been afforded another striking demonstration of the importance of the equilibrium in industry.

After 1914, and particularly after 1921, lower costs of raw materials and higher wages caused "value added by manufacture" to take first place in Chart VII while "value of product" (selling value) still remained in the middle place.

This is a very interesting development because it refutes from Mr. Welch's own evidence his sensational comments on Chart VIII. He relies on this to prove the contention that rising profits and increasing production had unbalanced the situation. Chart VII supports the figures given above and shows that from 1923-29 the average percentage of manufacturing profits did not increase, for the reason that selling prices were falling while the volume of business was increasing. Industrial gains are distributed to the public not alone through rising wages but also through falling prices, a fact which throughout his thinking Mr. Welch fails to recognize. He sees wages as purchasing power to the recipients, but never as a factor in the cost of living or in the purchasing power of consumers.

On page 176 Mr. Welch refers to the National Bureau of Economic Research, Inc., as an authority, and it *is* an excellent authority. We have quoted above from its new volume by Professor Mills. This work affords the most complete and authoritative review of economic developments in the United States in the thirty years from 1899 to 1929. On page 380 appears an index of average selling price per unit of product for the manufacturing industries in the census years 1923-29. It is as follows: 1923—100.0; 1925—99.0; 1927—91.9; 1929—90.8.

Mr. Welch relies on Chart VIII to prove the alleged increase in profits. It shows an increase in "overhead plus profits" after 1923, without a division of these two factors. An important factor in overhead is fixed charges, that is, interest on debt, depreciation and obsolescence charges, and it is not improbable that in the pressure of hard competition selling expenses may have tended to increase. An important factor already referred to was the extraordinary utilization in several of these years of the full productive capacity. The main point to be borne in mind, however, is that in the period 1923-29, despite increasing "overhead and profits," prices to consumers were falling, as Professor Mills shows. In other words, the increase in aggregate profits which obsesses Mr. Welch was considerably more than covered by the increasing efficiency of the industries and so had no influence on the unbalance of the situation, as Mr. Welch represents. The depression did not begin with the highly organized industries, but in the disruption of relationships between these industries and the primary industries, and occurred largely because of wartime costs (wages) in the former.

The volume, "The National Income and Its Purchasing Power," referred to by Mr. Welch, published in 1930 by the National Bureau of Economic Research, Inc., and prepared by Willford I. King, one of the most experienced and highly regarded authorities on the subject, contains, on page 124, a table showing "per cents which total amounts received by employes as wages, salaries, pensions, etc., constitute of the entire realized income drawn by individuals from the various industries" in the years from 1909 to the latest year for which the figures could be compiled. This table shows that the per cents received by employes of the manufacturing industries from 1913-25 inclusive were as follows:

1913—79.8
1914—79.4
1915—79.8
1916—76.8
1917—78.5
1918—82.8
1919—84.7
1920—87.6
1921—83.3
1922—86.1
1923—85.5
1924—85.7
1925—87.8

This shows that of the aggregate amount drawn from manufacturing industries in 1913 as an account of capital wages and salaries of employes amounted to 79.8 per cent while dividends and interest took up the remaining 20.2 per cent. In 1925, the last year for which figures were available, wages and salaries amounted to 87.8 per cent and dividends, interest and rent accounted for the remaining 12.2 per cent. This is further proof from the record that labor's share of the proceeds of the industries was not declining in the twenties, but rising. Although Professor King's calculations do not come down past 1925, the fact that they were in harmony with the official income figures indicates that the latter may be accepted for the remaining years. Doubtless Professor King's figures are based upon income and census figures.

It may be added that to the extent that the wage-and-salary class owned stocks or bonds, either directly or as savings-bank depositors or life-insurance policy holders, they shared in the 12.2 per cent which went to capital in 1925.

The theory that investment of the profits of modern industry tends to increase production faster than purchasing power available for consumption has had considerable vogue, but the argument for it does not stand examination. It usually fails to take account of two factors; viz: the influence of the new investments in lowering prices and the fact that disbursements for the investment of capital give employment to labor, the same as other disbursements.

The return of profits to industry for the purpose of cheapening and increasing production has been going on since the beginning of machine production, and even before. Mr. Welch admits that the classical answer to his argument is that goods and services pay for each other. The only real problem is that of maintaining the equilibrium of production and exchange.

In the new book referred to above (Professor Mills') there is found a vindication of the modern economic system that should satisfy any critic who will make allowance for the fact that it is a free system, dependent on intelligent co-operation among its members and subject to the imperfections inherent in human nature itself. Professor Mills has compiled the remarkable figures given herewith. They show that in the thirty-year period covered in his review, production in the manufacturing industries of this country increased at the rate of approximately 3 per cent per worker per year. The figures by census periods follow:

Census Year	*Physical Volume of Production*	*Number of Wage Earners*	*Output per Wage Earner*
1899	100	100	100
1904	120.2	108.1	111.2
1909	154.5	130.0	118.9
1914	176.3	136.1	129.6
1919	225.1	169.4	133.0
1921	186.3	136.2	136.9
1923	275.6	177.3	155.5
1925	282.2	169.1	166.9
1927	287.2	163.6	175.7
1929	331.4	164.2	189.7
	7.0%	2.1%	3.0%

(From Tables on pp. 26, 192 and 290)

Another interesting feature of this review is the showing of the relative production in the form of consumption goods and goods for capital investment. This has a direct bearing on the theory that the facilities for production were being increased too rapidly. In the pre-war period, 1899-1914, the production of consumption goods increased at the annual rate of 2.6 per cent (p. 21) and the production of capital goods at the annual rate of 5 per cent. In the period from 1923-29 the corresponding percentages were 3.7 and 6.4 (p. 280). In these calculations consumption goods include residential construction and capital goods include non-residential construction and public works. The rate of increase for consumption goods in 1923-29 over 1899-1914 was 42.3 per cent. For capital goods it was 28 per cent. This seems completely to dispose of the theory so confidently advanced by Mr. Welch and others and held by Mr. Welch as his second thesis.

The foregoing answers all the closet philosophers, technocrats and agitators of various types who take advantage of the present state of disorder to attack the existing economic system. There is not a skip in the record of progress in any census period over these thirty years. This is sufficient proof that the progress has not been fortuitous but guided by economic law.

It is true that there have been periods of crisis and depression, but there is good reason to doubt that any of these has been caused by the normal workings of the economic system, or that any security against such periods would be assured by a higher degree of what is called "social control," which means control by the political authorities. It was the latter who made the world war and the peace treaties, who have been attempting to collect impossible sums across international boundaries, who have raised the trade barriers and attempted the numerous price-fixing schemes that are responsible for trade confusion.

The limitations of space prevent my going into detailed review of the text of Mr. Welch's article. I should like to have given more attention to his theory that prosperity can be assured by a wage policy that assumes that purchasing power can be increased by raising wages and passing the cost on to the consumers, but does the propositon not answer itself?

On page 176, second column, Mr. Welch seems to recognize the fundamental importance of equilibrium in economic relations, and his attempt to hold industrial management responsible for disturbing it is further recognition. But he avoids any recognition of the fact that a rise in transportation costs which seriously impedes the exchange of products is a disturbing influence which deserves analysis. In view of the fact that more than one-half of railway expenditures are made up of wages, and average hourly railway wages are approximately 140 per cent above the 1914 level, while prices of staple farm products are approximately 50 per cent below the level of that year, it seems evident that in this section of the economic system equilibrium is seriously disturbed by wages. Moreover, the fact that unemployment in the railroad brotherhoods is now 40 per cent of the membership indicates that, by the test of "money in pay envelopes," the policy of maintaining boom-time wage rates under present conditions is not showing good results to the wage workers themselves.

I feel that I cannot close without one direct quotation from Mr. Welch's article, a single sentence near the end in which he says that "under our economic system goods are produced primarily for profits and not for consumption." This is so much like the socialist slogan of "production for use instead of for profit" that the two may be considered as emanating from the same state of mind. There is no more offensive or ignorant misrepresentation of legitimate business than the charge that its guiding principle is to make profits regardless of the service rendered. It is true that business cannot long exist without profits, but it is equally true that no business can long make profits without rendering value received to the public. They are correlative propositions, one as important as the other, from the standpoint either of the public or of legitimate business. Both are possible when the economic equilibrium is maintained and not otherwise. I take it that this is the platform on which the Taylor Society stands.

Mr. Welch's Reply

MR. ROBERTS' first criticism is of Chart V, page 175. The data upon which the index of dividend-and-interest payments is based, shown on Chart V, are compiled by the *New York Journal of Commerce*. These data are reported currently in *Standard Statistics* and in the *Survey of Current Business*, issued by the Department of Commerce. Both of these reporting agencies are generally accepted as legitimate sources of current statistical data. However, after the article had been published, I discovered that the *Journal of Commerce* sample of corporations, upon which the dividend data are based, was increased in two years, 1927 and 1929. As Mr. Roberts states, I then revised the index of dividend-and-interest payments by the use of data reported in "Statistics of Income," issued by the United States Treasury.

The tabulation below gives an analysis of the *Journal of Commerce* sample from 1923 to 1929, the latest year for which "Statistics of Income" has been published. The proper criterion for testing adequacy of sample in such a case is not the number of corporations, as Mr. Roberts would lead us to believe, but the volume of dividend-and-interest payments. The following tabulation indicates what percentage the dividend-and-interest payments reported by the *Journal of Commerce* were of the total dividend-and-interest payments in each year as reported by "Statistics of Income."

The *Journal of Commerce* figure for total dividend-and-interest payments was 48 per cent of the "Statistics of Income" figure in 1923. The corresponding percentage in 1926 was 44 per cent. Thus, the *Journal of Commerce* sample was relatively smaller in 1926 than in 1923. The sample increased from 44 per cent in 1926 to 52 per cent in 1927, and from 52 per cent in 1928 to 57 per cent in 1929. The years in which significant changes in the sample took place were 1927 and 1929.

ANALYSIS OF JOURNAL OF COMMERCE SAMPLE

Year	1 *Total Interest and Cash Dividends Paid by All Corporations* (Millions–income-tax data)	2 *Total Interest and Cash Dividend Payments Reported by Journal of Commerce* (Millions)	% of Column 1
1923	$ 7,447	$3,585	48.0
1924	7,784	3,841	49.0
1925	8,806	4,086	46.0
1926	9,934	4,391	44.0
1927	10,799	5,580	52.0
1928	11,655	6,030	52.0
1929	13,281	7,559	57.0

Year	1 *Total Interest Paid by All Corporations* (Millions–income-tax data)	2 *Total Interest Paid as Reported by Journal of Commerce* (Millions)	% of Column 1
1923	$3,278	$2,622	80.0
1924	3,445	2,828	82.0
1925	3,617	3,017	83.0
1926	3,989	3,218	81.0
1927	4,375	3,480	80.0
1928	4,581	3,703	81.0
1929	4,925	4,110	83.0

Year	1 *Total Cash Dividends Paid by All Corporations* (Millions–income-tax data)	2 *Total Cash Dividends Paid as Reported by Journal of Commerce* (Millions)	% of Column 1
1923	$4,169	$ 963	23.0
1924	4,339	1,013	23.0
1925	5,189	1,069	21.0
1926	5,945	1,173	20.0
1927	6,424	2,099	33.0
1928	7,074	2,327	33.0
1929	8,356	3,449	41.0

The two lower sections of the tabulation show that the significant changes in the sample arose from the dividend figures and not from the interest figures.

Table 12, which appeared on page 182 of the BULLETIN OF THE TAYLOR SOCIETY for October, 1932, is shown below, after being revised in accordance with the Statistics of Income data. Chart V (revised) is also presented below.

The net effect of the adjustments which were made is to decrease the amount of the rise in dividend-and-interest payments from 1926 to 1927 and again from 1928 to 1929. The analysis based on Chart V which was presented in the original article should be modified in degree but not in character. The wording of the original analysis can be applied directly to the revised table and chart, the only changes being the figures in brackets which are taken from the revised table. "The dividend-interest curve rose continuously but at a fairly moderate rate from 1923 to 1926; from 1926 to the first half of 1930, dividend-interest payments increased at such a rate that the

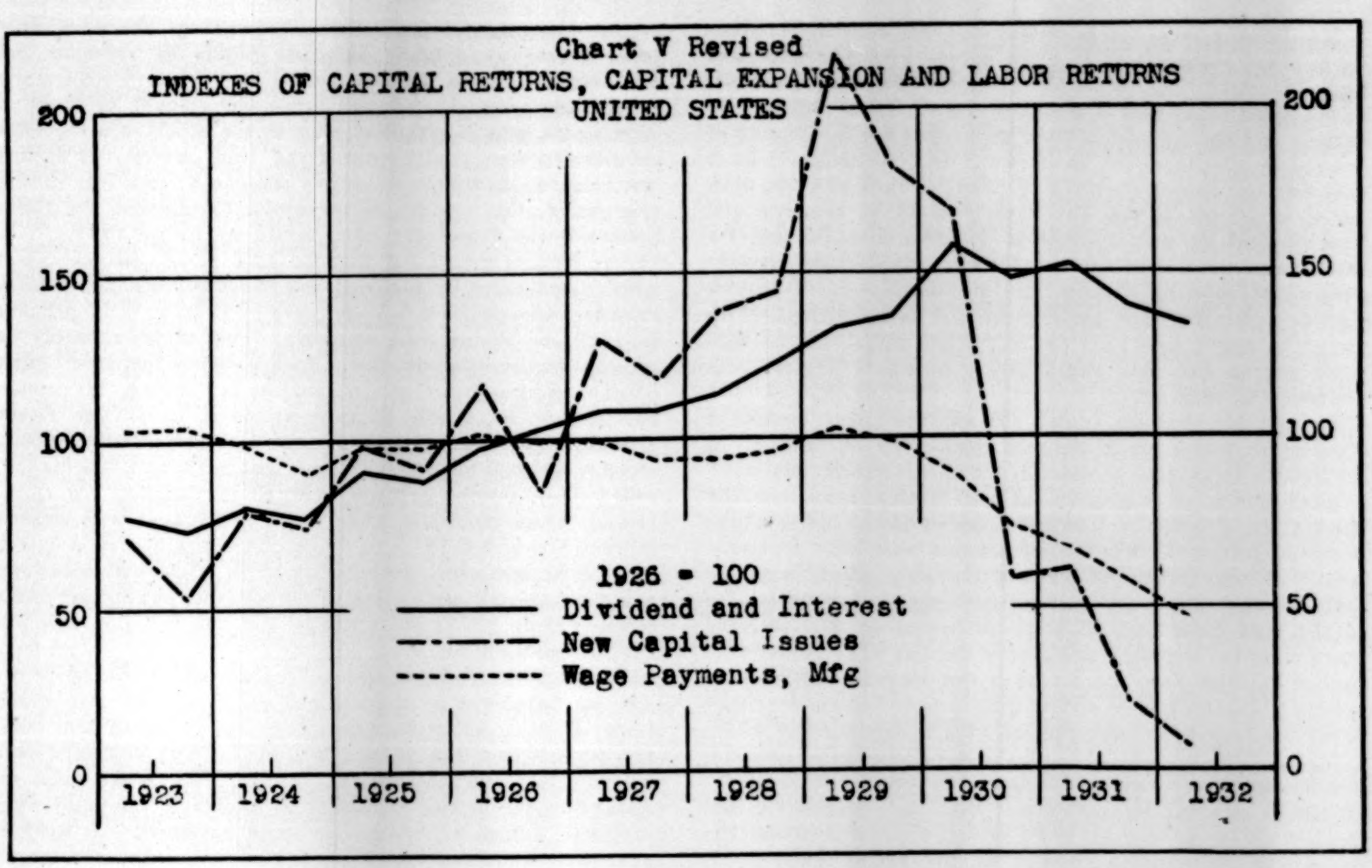

TABLE 12 (Revised)

INDEXES OF INTEREST AND CASH DIVIDEND PAYMENTS MADE BY ALL DOMESTIC CORPORATIONS

1926 = 100%

Year	Half	1 *Journal of Commerce Figures*	2 *Column 1 Adjusted by Income-Tax Data*
		Per cent	
1923	1	83.9	77.4
	2	79.4	72.6
1924	1	88.1	80.0
	2	86.8	76.7
1925	1	93.3	90.1
	2	92.7	87.2
1926	1	96.8	97.5
	2	103.2	102.5
1927	1	126.2	108.6
	2	127.5	108.9
1928	1	132.3	113.1
	2	142.2	121.6
1929	1	169.5	132.2
	2	176.1	135.2
1930	1	196.8	156.6
	2	179.1	147.6
1931	1	195.0	151.5
	2	179.6	139.6
1932	1	171.6	133.3

first half of 1930 reached a peak (57) per cent higher than the 1926 level. The total volume of interest-and-dividend payments in both 1930 and 1931 were higher than in 1929, and in the first half of 1932 they were still (33) per cent above the 1926 level. It is true that a large part of these payments was undoubtedly made out of surplus accumulated before 1930, but the important thing is that these payments were maintained. On the other hand, payrolls have decreased constantly since the middle of 1929 until in the first half of 1932 they reached a level which was 55 per cent below that of 1926.

"This index of interest-and-dividend payments is compiled by the *New York Journal of Commerce* and is published by *Standard Statistics*. It represents total payments of dividends and interest on corporation stocks and bonds. The rapid increase in total dividend-interest payments has been due to increases both in capitalization and in rate. Stock dividends are not included in this index. We know that many dividend rates were cut and even omitted in 1930 and 1931, but the amount of corporate securities outstanding is so great that total dividend-and-interest payments are still higher than in 1926.

"When we look at this chart and stop to consider in addition that mass consumption is largely financed out of wages and salaries, it is somewhat easier to understand why our productive capacity has outrun our ability to consume in recent years." (Pp. 174-6, October issue)

In the above quotation I have merely substituted revised figures; the relationships between the movements of the three lines on Chart V (revised) warrant making the same statements and drawing the same conclusions that I did in the original article. Further revisions may need to be made in the figures since 1930 when later issues of "Statistics of Income" are published, but until then the above figures stand.

Mr. Roberts says, "It is evident that the *Journal of Commerce* never contemplated that the figures would be used as a basis for comparing the total dividend-and-interest payments of all corporations over a period of years. Their use for that purpose and the arguments based upon their use in the text of the article, therefore, are unwarranted and misleading." It is true that any figures are perfectly harmless until they are used, but it is difficult to see why figures should be compiled and then reported by such agencies as Standard Statistics and the Department of Commerce unless they can be used for the purpose of showing changes and movements. It is possible that even the Treasury Department did not contemplate the use of its figures as a basis for comparing capital returns with labor returns, but that would hardly constitute a valid condemnation of such use.

I quote Mr. Roberts again: "to use newspaper reports of dividend payments which did not purport to be complete or comparable from year to year, is proof of careless methods." I plead guilty of negligence in not having more carefully checked the *Journal of Commerce* figures before using them; however, neither *Standard Statistics* nor the 1931 "Supplement" of the *Survey of Current Business,* which were the sources I used, raised any question concerning the comparability of the data from year to year. In regard to Mr. Roberts' question as to why the "Statistics of Income" figures were not used in the first place, the answer is that they are not available currently, but only after several years delay. Figures for 1929 have little value as an indication of what is happening in 1933.

Mr. Roberts suggests that interest-and-dividend payments of non-industrial corporations should not be included in the index of capital returns. He points out that the organization and rapid expansion of financial and non-industrial corporations was one of the outstanding features of the period 1926-1929. From Mr. Roberts' own argument it becomes obvious, therefore, that an index of capital returns which did not include the interest-and-dividend payments of these corporations would not reveal the true picture during the period under consideration. It is true that holding companies receive dividends and interest from the corporations they control, and then pay them out again. This results in a certain amount of duplication, but it cannot be eliminated except by subtracting dividends and interest received by corporations from dividends and interest paid. This practice, however, would eliminate not only the duplication but also a considerable amount of true dividend-and-interest income. Many corporations receive dividends and interest from others and then use the proceeds to expand capital facilities. The dividends and interest received from other corporations and used in this way are a true capital return and should be included in the index. Furthermore, corporations use a large part of their own operating income to expand plant, create large surpluses, etc. These amounts are also capital returns, but do not show up in an index of capital returns based merely on interest-and-dividend payments. In view of these facts, it is probable that the revised index of dividend-and-interest payments underestimates the growth in capital returns from 1926 to 1929. Mr. Roberts says that interest-and-dividend payments of manufacturing industries increased only 21 per cent while interest-and-dividend payments of all corporations increased 33 per cent from 1926 to 1929; but a 21 per cent increase in manufacturing interest-and-dividend payments appears rather large when compared with an increase of 0.6 per cent in factory payrolls during the same period.

It is not surprising that the average percentage of profits on aggregate net sales of manufactured goods showed no decided upward trend during the period 1923-1929. Aggregate profits are, to a large extent, dependent upon the volume of sales. The average percentage of profit shows little change, therefore, since it is derived by dividing aggregate profits by aggregate net sales, both of which tend to parallel each other. Furthermore, interest payments are deducted before the amount of profit is determined; what I was discussing in the article was the relationship between capital returns and labor returns. If it had not been for instalment and credit sales on a large scale during this period, the inability of consumers to purchase the goods produced would probably have shown up before 1929.

Mr. Roberts points out that the ratio of net income to net worth, represented by preferred and common-stock and surplus account, increased from 6.75 per cent in 1926 to 7.34 per cent in 1929, or by less than one-tenth. This would naturally be expected for two reasons: first, Chart V shows that new capital issues were being issued at a tremendous rate during this period; and second, net worth of corporations is to a large extent dependent upon net income. Naturally the two factors moved together, but the important thing is that net worth, net income, and dividend-interest payments were all increasing in the aggregate at a very rapid rate while wages and salaries were increasing but little from 1926 to 1929. This fact hits right at the core of the argument. Investments of all kinds were absorbing a larger and larger proportion of the national income and credit from 1926 to 1929, and a smaller and smaller proportion was left for consumption.

Quoting Mr. Roberts again, "An average profit of 5 per cent on the volume of business may rise to 10 per cent, or fall from 10 to 5, under changing conditions in production, trade and markets and thus effect a 50-100 per cent change with a comparatively small change in turnover. Mr. Welch takes no account of the greater variability of profits as compared with the total volume of business or wage payments." I wish to state that my calculations are based on aggregates, not ratios; whereas, Mr. Roberts gives two perfect illustrations of the type of ratio calculation which he condemns, when he shows the ratios of profits to net sales and of net income to net worth.

Mr. Roberts objects to the fact that I did not exclude investment trusts and holding companies from the index of new capital issues. It is true that these companies provided a considerable portion of the new capital issues, and it is further true that a considerable portion of the funds for these issues was raised by credit expansion. But that is all the more reason for including holding companies and investment trusts in the index of new issues. The very fact that savings can be geared up by means of credit expansion, makes them all the more effective in building up a huge mushroom structure of debts and fictitious capital values. The holding company is a very good example of how a small amount of actual savings or capital can be used to build up, by a process of credit inflation, book entries, stock watering, etc., a large capital pyramid on a small base of productive facilities. Any index of new capital issues that failed to include the holding company and investment-trust issues would surely fall far short of revealing what was happening to our tower of debts and capital values from 1923 to 1929.

In referring to table VII Mr. Roberts says specifically, "After 1914, and particularly after 1921, lower costs of raw materials and higher wages caused 'value added by manufacture' to take first place in Chart VII." He says this in spite of the fact that Chart VIII, which analyzes value added by manufacture, shows that wages increased but little from 1923 to 1929, while value added by manufacture and overhead and profits increased at a very rapid rate. It was decidedly not an increase in wages that caused the value added by manufacture to increase so rapidly from 1923 to 1929. It takes a powerful imagination to see wherein Chart VII "refutes from

Mr. Welch's own evidence his comments upon Chart VIII." In presenting Chart VII I made no assumptions as to why value added by manufacture increased so rapidly. Chart VIII answers the question for us and it was not because of "a phenomenal rise of wages" induced by "an unlimited and imperative demand for manpower." This situation existed to a considerable degree during the war, but not during the period from 1923 to 1929. During the war, the pre-war relationships between the various factors of production were fairly well maintained; it was during the period 1923 to 1929 that the various factors of production changed in relation to each other.

Another quotation from Mr. Roberts: "Industrial gains are distributed to the public not alone through rising wages, but also through declining prices, a fact which throughout his thinking, Mr. Welch fails to recognize. He sees wages as purchasing power to the recipients, but never as a factor in the cost of living or the purchasing power of consumers." A sufficient answer to this blast is to refer Mr. Roberts and the readers to references in my article: page 169—paragraphs 3 and 4; page 172—second column; page 173—first column.

It is true that Professor Mills' book shows that unit selling prices of manufactured goods were falling from 1923 to 1929. But it is also true that unit material and labor costs were falling still faster than selling prices—otherwise, total value added by manufacture could not have increased faster than cost of material and value of product on Chart VII, and overhead and profits could not have increased faster than wages paid and value added by manufacture on Chart VIII. As a matter of fact if Mr. Roberts took the trouble to read Professor Mills' discussion "On the Relative Importance of Different Elements of Cost as Factors in Price Changes, 1923-1929," on page 410 of "Economic Tendencies," he probably saw the following statement, "The decline of 9.2 per cent in selling price is the net result of a decline of 12.11 per cent in material costs, a decline of 14.25 per cent in labor costs, and an advance of 4.76 per cent in overhead costs plus profits." And Mr. Roberts calls it an "obsession" when I point out that overhead costs and profits were increasing while labor and material costs were declining! Then Mr. Roberts proceeds to state that the depression was caused by the maintenance of war-time wages in the highly organized industries.

In regard to the share of the national income and its purchasing power which is going to labor and capital, I refer Mr. Roberts to page 555 of Professor Mills' book. These figures are more recent than Professor King's, and are brought up to 1929. From 1922 to 1929, "the general index of real wages advanced by 2.1 per cent a year. . . Bondholders suffered a slight decline in real income (-0.1 per cent a year), while common-stock holders gained in real income at a rate of 16.4 per cent a year. During this period the capital values of invested funds (in current dollars) increased at a rate of 1.9 per cent a year for bondholders, at a rate of 18.8 per cent a year for holders of common stocks."

In submitting the table showing the average annual increase of 3 per cent in manufacturing physical output per wage earner from 1899 to 1929, Mr. Roberts might have pointed out that the average per capita annual increase in wage earners' purchasing power was approximately 0.6 per cent during the same period.

Mr. Roberts points out that the average annual rate of growth in production of consumers' goods was 42.3 per cent larger in the period 1923-29 than in the period 1899-1914. On the other hand, the average annual rate of growth in production of producers' goods was only 28 per cent larger in the 1923-1929 period than in the 1899-1914 period. Here is another case where misleading results are obtained by dealing with ratios of ratios. In absolute terms, the rate of growth increased *less* between the two periods in the case of consumers' goods than in the case of producers' goods, 1.1 and 1.4 per cent, respectively. Furthermore, it should be borne in mind that capital goods are partially cumulative, due to longer life. Another point that should be remembered is that the capacity of a nation to utilize an expansion of producers' goods is dependent upon its state of industrial development. I fail to see wherein Mr. Roberts has "completely disposed of the theory so confidently advanced by Mr. Welch and others." The article itself is sufficient evidence of what my reply to Mr. Roberts' war-and-high-wages theory of the depression would be.

As to the place of the profit motive in modern business and economic life, I refer Mr. Roberts to any standard textbook on economics or business.

In re 1933

Greetings from a British Member

The "Hogmanayful" Greetings that I would have sent to you
Have this year been retarded by that pestilential "flu":
I hope it's only streptococcic spleen that makes me doubt
If any grounds yet justify an optimistic shout!

The number of Earth's Sovereign States exceeds three score and ten,
Each one of which is taught to call the others "alien":
Within the sacred bounds of each, the Jingoist neurotic
Proclaims exports as "dutiful"; imports "unpatriotic":
Their politician-pundits are most grievously dismayed
Unless each has a "favorable balance" to its trade—
A comic sort of phrase which signifies—'tis strange but true—
The act of parting with more wealth than others send to you!
Each State seeks self-sufficiency within its garden wall
Until its Board of Trade declares there ain't no trade at all:
How can, indeed, the Mariners continue as its carriers
While world-wide fiscal foolery goes boosting up new barriers?
The ships go into dock to stop, while each despairing nation
Relapses to a state of crass commercial constipation:
The Governments, Micawber-like, then call upon all ranks
To grin and be content with less—excepting, p'raps, the Banks:
With falling profits, dwindling staffs, and confidence destroyed,
Fresh hundred thousands go to swell the millions unemployed,
Who mustn't be allowed to mend the drains and stop the smells,
To clear the slums, repair the roads, or build some new hotels,
Produce a bit more grub at home, and do what folk have written
To make the place more human-like for those who "Come to Britain."

But no! From all constructive work it seems we must desist
While interest is payable on wealth which don't exist.
No matter where one walks abroad—in France or Germany
The world seems to be safe for nothing but Shylockracy,
For prostituted Science, for Pseudo-economy,
The fostering of racial or of class antipathy!
When will the Money-monger Lords discover their mistakes
Of trying to make the wheels go round by putting on the brakes?

Things being thus, my fervent wish, until these shades have passed,
Is that this year will not turn out too much worse than the last;
But should for you the clouds disperse, to show a clearer sky,
No-one would more rejoice thereat than Reginald Mackay.

The Industrial Engineer Today

How He Can Help Management

By **HAROLD VINTON COES**
Ford, Bacon & Davis, Inc., New York

I PROPOSE to base my talk on a recent editorial in the *Business Week* (November 30, 1932, p. 32) as it seems to provide a suitable background for our discussion.

> As this depression has proceeded, life in these states has begun to resume a faintly Puritan flavor. . . . It seems a bit silly for a whole nation to be enduring the hardships and practicing the penurious thrift of pioneers on the fringe of an unexploited continent because it has produced more than it can use of all the things it needs and wants. . . .
>
> There is one aspect of this Puritan complex which we think it may be profitable for some of us American business men especially to ponder. We don't have to *pretend* that we have just landed on Plymouth Rock. We have. We don't need to play being pioneers. . . . We are. We left a distant and quite done-for land forever three years ago, set forth on a stormy and uncharted sea, landed on a strange, stern and rock-bound coast. We have discovered, or are about to discover, a new continent called the United States. It is unexplored, undeveloped, unexploited. It is covered with a wilderness of worn out ideas, attitudes, methods, ideals. It is infested with commercial wild animals and peopled with industrial aborigines. We have as little conception of its size, its concealed resources, its potentialities of prosperity and progress today as our ancestors had three centuries ago. . . . It is the greatest mistake in the world for us to suppose that anything has been done with this country yet.
>
> . . . as against the sufferings, the sacrifices and disappointments that parts of this nation are experiencing today, the privations of the Massachusetts Bay Colony were prosperity itself. Their task of taming a wilderness of natural resources was large but simple compared with our problem of controlling the vast chaotic economic system of machinery, men, money and science that has spread itself over this continent. The mysteries and terrors of the shadowy woods in which they walked were childish fears in face of the doubts and despairs that haunt the dark forests of men's minds today, amid which we move and which we must mobilize for combined action if we will live. The persistent faith and thrift by which our Puritan forefathers established the basis of our existence in this land were easy as contrasted with the confidence, freedom, and liberality with which we are required today to use the resources at our command.
>
> This is still the promised land, to most of our people still only a promise. The daring and determined minds of American business, many of them still unborn, are the pioneers to whom the opportunity to develop its potentialities is still open, and to whom the problem of putting them at the service of peace and plenty is still put.

I say then that one of the important things that the engineer can do is to reawaken faith, faith in ourselves, faith in our institutions, faith in our ideals, faith in our country, faith in the future.

Business in the future, at least for the time being, is going, I believe, to be predicated on the following foundation:

1. Knowledge of the characteristics of the product that the consumer desires.
2. Facilities economically to manufacture products with the characteristics desired by the consumer.
3. Knowledge of the volume of business that will obtain from economic distribution of products of suitable characteristics.
4. Change in volume by variation in operating hours rather than increased production facilities.
5. Maintenance of adequate research.
6. Maintenance of sound dividend-and-depreciation policies.
7. Conservation and building up of cash resources.
8. Avoidance of indiscriminate and punitive price cutting.
9. Avoidance of the practice of attempting to buy each other's customers and the development instead of co-operation among the units within the industry.
10. Developing means for stabilization of employment, maintenance of economic security of workers and of purchasing power.

We know full well that to maintain the necessary volume of business in our domestic markets and a high standard of living requires a sustained purchasing power, and yet we have not worked out sound and far-reaching plans for the general maintenance of this purchasing power. Of late years only about 10 per cent of our total annual volume of business has been exported, and with present depreciated currencies, tariff barriers and international debts, this percentage is likely materially to decrease. We must depend therefore upon our huge domestic market if we are to maintain high standards of living in this country.

In the October BULLETIN OF THE TAYLOR SOCIETY, an analysis was made, based upon a comprehensive survey by *Business Week*, showing the total domestic consumer expenditure for goods, services, taxes and savings for the year 1929. This showed that 78 per cent of these expenditures came from incomes of $5,000 or less and 22 per cent only from incomes of $5,000 and over, so that the important group in the maintenance of purchasing power is this group with annual incomes ranging from $5,000 downward.

In this same issue of the BULLETIN OF THE TAYLOR SOCIETY, Mr. Emmett H. Welch in his article on "Purchasing Power and Wage Policy" presents some charts and statistics that are exceedingly interesting. He shows a chart which compares the total volume of dividend-interest payments and new capital issues with payrolls from 1923 to date.

The chart shows that the dividend-and-interest curve rose continuously, but at a fairly moderate rate from 1923 to 1926. From then on the increase was more rapid. In 1930 and 1931 dividend-interest payments were above 1929, and in the first quarter of 1932 they were still considerably above 1926. The author states that a large part of these payments was undoubtedly made out of surplus accumulated before 1930 but that the important thing is that they were maintained. On the other hand total manufacturing payrolls have decreased consantly since the middle of 1929. The author goes on to say that if we look at this chart and stop to consider that mass consumption is largely financed out of wages and salaries, it is somewhat easier to understand why our producive capacity has outrun our ability to consume in recent years.

That there is something faulty in our distribution of wealth, and in our distribution of the total national income, is quite evident from a study of these statistics. That the wealthy diverted too much of their excess income in the boom period to increasing and duplicating existing production facilities seems obvious, with results we all know.

We have therefore the problems of bringing about a better balance in the distribution of the national income returned to capital, to salary and wage earners and to farmers.

Now let us consider briefly the problem incident to the unbalanced situation between agriculture and industry. Normally, approximately one-half of our industrial workers depend for employment upon materials supplied by the farm. The farm supplied, in 1929, one-tenth of the manufactured products, one-eighth of the freight tonnage, one-half of the exports, one-fifth of the tangible wealth and one-fifth of the cost of government. In 1920 the gross annual farm income was $16,400,000,000; in 1932 this had shrunk to $4,600,000,000 or a shrinkage of $10,800,000,000. Ths shrinkage exceeds twice the total exports at the peak and is equivalent to about one-fourth of the retail sales. In 1919 agricultural production was at its peak; 6,500,000 farms supported a farm population of 31,500,000 with farm property of $78,000,000,000 which had shrunk in 1930 to $57,000,000,000.

If better means of distribution were brought about to prevent the overabundance of certain products of the farm in the large consuming centers, farmers would obtain more for their products, and consumers would obtain produce at a lower cost. This would tend to bring about a better balance between agriculture and industry. It would seem that with these problems of distribution and the elimination of wastes in distribution, there is some real work for the industrial and management engineers to do.

Again, there is need for bringing about better balance between rural and urban population. In 1870, 79 per cent of our population was rural and 21 per cent urban. In 1900, 60 per cent was rural and 40 per cent urban, while in 1930 the urban population was greater than the rural; 56 per cent was urban and 44 per cent rural. The depression is probably changing this relationship.

It has not been realized up to the present that there are after all no such beings as supermen; that perhaps there is a limit to man's comprehension; that maybe we can make physical units too big and aggregations of employes too large for sound and efficient administration and management. We are realizing that cities can become too large for comfort, well-being and safe and efficient administration; that the advantage of a large city location for industrial units, except for those organizations which must, of necessity, be located in or immediately adjacent to a metropolitan area, can be more than offset by the disadvantages.

There is a growing consciousness that in the large cities masses of our population whose sole dependence is on a regular pay check are economically insecure; that while business continues to move in cycles, whole sections of the population can be and are, at least, temporarily dislocated, disorganized and in distress; that this imposes burdens greater than their resources can sustain on the employed population, employers, city welfare organizations, the city administration and sometimes, as at present, on the states. Therefore, we have thrown our rural and urban population out of balance. All of the foregoing considerations are leading thoughtful men and women to the conclusion that we can best bring our population into balance, strengthen our economic position, bring more light and happiness into the lives of thousands of families if the process of dissolving our industrial concentration is accelerated.

Mr. J. B. A. Kessler, Joint Managing Director of the Royal Dutch Shell, in an article which appeared in the Trade & Engineering Supplement of the *London Times* of November 5, states:

> Modern equipment of industry renders it necessary that voluntary arrangements be made for limiting production in times of overproduction or underconsumption. On account of the large capital investment that is involved in industry today, free competition along old-fashioned lines is completely broken down as an effective means of maintaining a balance between supply and demand. As long as industry was organized on a small scale, as in the past, free competition proved an effective check when supply tended to exceed demand. Of course, the free application of the law of supply and demand does mean, even now, that no equipment for production will be erected when prices are low, but unless there is a voluntary arrangement for restriction during periods of overproduction no production units which have already been erected will be voluntarily shut down before the price has dropped to a disastrous low level at which the manufacturer will lose less by closing down than by marketing. Ultimately, of course, bankruptcy will follow, all labor employed is suddenly turned into the street and capital invested in the enterprises is lost. It is the inevitable result of lack of co-ordination in modern industry.

Modern plants turn out goods much more cheaply than old-fashioned plants. Therefore, modern factories are good for the world and the future is theirs, but the future will only be theirs if hand and hand with the erection of modern plants, co-operation between different members of the industry replaces the present cut-throat policy.

The public press contains many references to labor insurance, unemployment compensation, unemployment insurance. There is nothing scientific about many of these proposals. I do not like the word "insurance" in this connection. It assumes, it seems to me, that the risk can be placed on an actuarial basis, which is not possible in the present state of the art. Therefore, I prefer to use the phrase "unemployment reserves." This is a problem which industry should face and solve along sound lines for each class of industry; otherwise the state will try to do it. Several states—Ohio, Massachusetts and Wisconsin—have legislation pending or approved on this subject now. The Interstate Commerce Commission set up a proposed program for six industrial states last winter. The American Federation of Labor has recently come out for an unemployment-insurance program supported by industry and state controlled.

It seems to me that a scientifically worked-out and articulated program probably would be of considerable assistance, not only in helping to solve unemployment problems, but in substantially maintaining and stabilizing purchasing power during periods of business recession.

Now all of the foregoing involves "management" and the responsibility of management. In this connection, it seems to me that the capacity of management depends upon its ability:

1. To exercise successfully financial control.
2. To set up suitable organization and delegate authority.
3. To gear production to consumption.
4. To lay down sound sales and economic distribution policies.
5. To maintain sound dividend, depreciation and wage policies.
6. To control inventories.
7. To use records properly.
8. To use assets properly and to maintain high conditions of productive facilities.
9. To guard against business hazards.
10. To have knowledge of product characteristics desired by consumers.
11. To be alert to changes in the art and guard against supersession of products.
12. To co-operate with external agencies toward the sound solution of the problems of the day.

It seems to me that under present conditions manufacturers generally are utilizing their surplusses or cash resources, or both, in either of two ways: (1) in trying to carry on while waiting for something to happen, in the hope that conditions will soon be better and business come back with a rush; (2) in accepting conditions as they are and making an investment by carefully and thoroughly preparing for the future, through carefully developed programs for new products, redesign of existing products, replacement of obsolete equipment, plant layouts, methods, processing, distribution methods and processes.

The first policy produces nothing constructive and probably will leave the manufacturer who is pursuing it in a cumulatively weakened condition. What is worse, he will be in a position where he cannot successfully compete as business starts to recover.

The second policy presupposes an examination of everything that is being done at present with a view to the elimination of existing wastes and weaknesses; the improvement of the product so as to make it contain the characteristics desired by the purchaser or consumer; the replacement of obsolete equipment with the most modern that is available; the study of processing and processing costs; possibly a relayout of the plant to a scale commensurate with the probable volume of business in those products containing the characteristics demanded by the consumers.

This procedure should involve a discard and write-off of obsolete plant and facilities and other assets that will not be required for future production. This would improve earning position by relieving the earnings of the next few years of the load of fixed charges on obsolete or excessive production facilities.

One of the most important questions confronting management today is the replacement of obsolete equipment; the relationship between costs and equipment, between equipment and the consumers' demands for product characteristics which the old equipment cannot impart and between profits and equipment.

In the past in this country production was usually based on producing an article that had been designed, engineered and styled from within. The demand in the past was even for products without suitable characteristics. People would still buy them. Now manufacturers are learning that they must reverse the process; they must find out precisely what the consumer really wants, must cope with caprice buying, with color, style, fashion and art; must learn in what quantities, at what price and at what outlets the consumer wants these products and then create or recreate products which meet this latent demand.

If, as many of us believe, our production technique is far ahead of our distribution technique and if this improved production technique, in many instances, particularly in well-managed plants, is reaching the point of diminishing returns, then manufacturers in the future must look for their profit in better distribution technique and the elimination of many of the present wastes in distribution. This means that scientific plant location and branch-plant location, will be the order of the day and that these locations will be chosen with a scientific regard for the factor of distribution.

It is a significant fact that scientific market analysis and scientific marketing have measurably lagged behind scientific production methods, and therefore, the old methods of selling and of distribution are probably no longer adequate. The market may have moved away from the producing center, in which case existing production facilities may have to be split up into branch plants to serve the markets adequately and economically. Otherwise the reverse may be true and branch plants may have to be relocated or consolidated. Overheads may be unsoundly allocated with resulting prices that are too low or costs that force one out of the market on some products. Selling and distribution overhead expenses may be unscientifically apportioned, thereby giving a false impression as to the relative profitableness of products and of markets.

More attention is being given to distribution research, to the cost of marketing and marketing activities and to the cost of handling items or providing services. When one considers the duplication in delivery service of dairy and baking products, for example, it would seem as if there were an oppotunity to bring about a reduction in this duplication, with a corresponding lowering of cost to the consumer and increased profit to the producers. It is quite common to find in industry today, regardless of product, that 80 per cent of the volume comes from approximately 20 per cent of the number of items in the line. A similar relationship exists with respect to active customers' accounts on the books, total sales outlets and the business volume. This means a waste in distribution and a large portion of the volume of retail business conducted at wholesale prices.

The wrong agencies of distribution may be used or the right agencies wrongly used. Consumer attitudes toward a product, a company or an agency of distribution may not be known. The consuming public, of necessity, is becoming more and more discriminating toward the goods and services that it purchases.

With this background and general picture of the broader situation before us, suppose we now endeavor to focus our attention on specific items that the industrial and management engineer should consider; namely, that change is the most constant and persistent factor in the present era, that our volume complex should be scrapped. Some accountant once said that unit costs would go down as volume was increased. He would have saved us a lot of worry if he had coupled with it the proviso "Provided the additional volume can be sold at a profit." There is an economic law that prices tend to approach the cost of production, but included in this cost of production are all the legitimate charges for labor, material, overhead, selling and administrative expense and a reasonable profit. Selling at below cost is the road to business suicide. It is frequently done because of lack of understanding, cowardice or the lack of knowledge of costs. Therefore, means should be set up for properly analyzing production costs, reducing these to the lowest possible point consistent with quality and service; for analyzing distribution costs in order to set standards and establish means for comparing the actual with the standards. Too many organizations are faulty in their setup. There is an overlapping of functions and of authority. Authority is not properly delegated. An organization is honeycombed with internal politics and does not function as a team. There may be no time for the management to think and to plan.

One frequently finds, for example, in studying distribution, that many do not know their direct-selling costs, the cost of sales per salesman, the number of calls he should make a day, the volume of business that should result per one hundred calls, the returns and allowances that should be permitted per salesman, which customers are profitable and which unprofitable, the relative profitableness of products or of lines of products, how much business must be done to break even on a salesman or to break even on a territory, whether the company is maintaining its position in the induustry. Many do not have adequate and effective salesman's compensation plans based on assigned tasks, retention of customers, allowances and returns, new customers, credit losses and similar other factors. It is frequently found that they do not have the courage to close off unprofitable outlets or discontinue unprofitable products and that they do not know which is a profitable or an unprofitable outlet for their goods. They do not know, for example, which means of delivery produces the lowest cost, nor which trucks, gasoline and tires are the best for them and the most efficient under their conditions. No comparative records are kept of truck and route car performance, cost of operation, maintenance and upkeep; they do not know what consumer acceptance, preference and attitude means; they have not studied the consumers' desires, what they want as to quality of product and the characteristics which they believe the product should contain. In many cases, manufacturers do not know clearly what product competition they have to meet, and particularly what inter-industry competition. They have never analyzed their sales dollar and definitely allocated the correct proportions for materials, labor, manufacturing overhead, profit, selling, advertising, distribution, general and administrative expense and set up standards as objectives to be attained. They have never set up definite standards of comparison of effectiveness. They do not know whether their clerical methods are properly organized, suitably mechanized and reduced to their lowest terms. Their budgets are not flexible enough to permit of satisfactory operation and regulation in this era of rapid change.

Some of them are so far from even a conception of what constitutes the scientific approach to the solution of problems of production and distribution, that in their operations they remind one of children playing store, but with this decided difference—they lack the children's imagination.

The above can be summed up as follows:

1. Analysis of business to ascertain trends.
2. Analysis of competitive and substitute products.
3. Study of obsolescence of products, of distribution facilities and of production facilities.
4. Study of price trends and policies.
5. Study of consumer trends, reactions and attitudes.
6. Determination of future opportunity in the market.
7. Determination of future sales volumes.
8. Organizing for future volume.
9. Research, in products, markets and producing methods.
10. Budgets, flexible enough to permit comprehensive control and regulation.
11. Planning of production and of distribution.
12. Co-operation in the industry.
13. Stabilization of employment.
14. Proper financing of the enterprise, including sound capital structure.

Paper presented before a meeting of the Taylor Society, arranged by the Society of Industrial Engineers, New York, December 8, 1932.

Reviews

Poverty in Plenty. By J. A. Hobson, The Macmillan Company, New York, 1931, pages 92.

The Way Out of Depression. By Hermann F. Arendtz, Houghton Mifflin Company, New York, 1931, pages xii, 105.

Professor Hobson commences his provocative little book with the thesis that increasingly the problem of determining who shall receive income and how much each shall receive is not one that can be decided on arbitrary grounds or preconceived principles. He concludes that "analysis shows that the labor market from top to bottom throughout the economic system distributes income with no regard to equity or humanity." If this contention is admitted, one can then proceed to argue, as he does, that the whole problem of distribution can be brought much more effectively than now "under the conscious collective control of human will."

He goes on to insist that the right of the individual to demand work and the correlative obligation of the community to provide it thus become of basic importance,—an idea that have gained in momentum in the last few years.

He then goes on to prove again his familiar thesis that we could with existing equipment, etc., produce at least twice as much wealth per capita if the forces of distribution were handled more affirmatively. And he shows convincingly how all this implies a considerable degree of planning, not merely nationally but internationally.

Professor Hobson is no socialist, but one who believes in an experimental approach to a better distributive system. And he ends with another theme which is equally sure to gain currency in the next quarter century,—namely, that in any planning effort "the most critical issue will be that of the proper moral relation between personality and community."

I cannot too highly recommend this short and easily digested volume to everyone seeking to clarify his thought about the ways out of our economic difficulties. It recounts in what is, in my opinion, an unassailable way, the fundamental principles, political, economic, and moral, which must control any sound economic reconstruction.

Mr. Arendtz' book, on the other hand, is a piece of special pleading for the economic value of the restoration of silver as a standard of value with gold to the end that there will be a larger supply of metal on which the credit structure can be built up. It is doubtful in the minds of many experts whether this proposal would have any very definite ameliorative effect. And it is equally clear that by agreement it would be possible to reduce the reserve ratios with the gold standard so that the existing supply of gold metal could constitute the base for whatever expansion of credit is necessary until such time as the world is ready for some such proposal as an international managed currency such as John Maynard Keynes advocates in his "Treatise on Money," and which, when realistically viewed, is increasingly becoming a fact anyway.

In the flood of books which have been coming out on proposals for economic revival, it may be laid down as a safe guide to an economical use of time and reading that any book which offers anything approaching one simple panacea may be passed over as not requiring serious consideration. Obviously to every realistic mind the battle has to be fought simultaneously on many fronts.—*By* ORDWAY TEAD, Editor of economic and business books, Harper & Brothers, and Lecturer on personal subjects, Columbia University.

Applied Personnel Administration. By J. E. Walters, John Wiley & Sons, Inc., New York, 1931, pages ix, 338.

Essentially practical, this book is very properly titled, "Applied Personnel Administration." Following a logical organization of subject matter, its information is presented on a common-sense basis, as obtained by personal contact with the personnel departments of about seventy-five representative industrial and business concerns visited by the author and, as well, upon his consulting business and army experiences. He has been thorough and generous in his use of selected references, so that his treatment of individual subjects measures the practice of known authorities and business leaders in general personnel relations, complementary to the individual cases cited. While written primarily for the college student, it is not at all cluttered with the flora of academic expressions commonly found in many theoretical textbooks. It does tell the beginner in this field that personnel administration "is the obtaining of an efficient human force, adapted to the organization for which it is intended, and the maintenance of this force in relations, mutually harmonious and profitable to employer and employe," and subsequently presents in an attractive manner desirable information on how to select and maintain an effective personnel. To the industrial and business man, this book is a convenient means of learning of the approved personnel practices in the leading concerns with a consciousness of the need for human efficiency. It is, as well, a handy reference to the reports and publications of leading consultants in this field, none of whom seems to have been overlooked.

Importantly weighted by statistical support, Mr. Walter's treatment of his various subjects is definitely informative by case example. He pleasantly avoids the common error of being too conclusive by overgeneralization in his statements. The reader can profitably see the need for flexibility and individual adaptation of any phase of industrial relations to the particular needs of his own organization by noting the differences between the outstanding features of the various personnel-administration plans of these leading companies, as pertinently mentioned from time to time by the author.

We like his easy manner of presentation of facts, logical development of rational conclusions, broadminded analysis of a wide range of field material, and his recognition of what is new and seemingly important in the technique of applied personnel administration. Whether one is a student of, or a practitioner in, the field of general industrial relations, we believe that this book has much interesting and valuable information.—*By* H. R. Bixler, Industrial Relations Department, Union Carbide and Carbon Corporation, New York, N. Y.

Equality. By R. H. Tawney, Harcourt, Brace & Company, New York, 1931, pages xii, 280.

This volume of Tawney's compares in a way with T. V. Smith's excellent "The American Philosophy of Equality." But Smith makes admirably clear what we can mean by equality, whereas Tawney is more concerned with the institutional arrangements which can secure it, especially in relation to the English scene. Somehow the study seems less trenchant and more bookish than Tawney's earlier work and certainly for the American reader it is less relevant and less stimulating than Professor Smith's essay. But as a statement of how economic institutions have to be modified if equality is to be a reality, this book is a thoughtful formulation.—*By* Ordway Tead.

Planning Standardized Components to Secure Variety in Products, page 308, *Foreign Standards Available from A. S. A.,* page 314, *American Standards of Safety in the Construction Industry,* page 320, Volume 3, Number 12, December, 1932; *Developments in National Standardization During the Year* 1932, page 5, *Standards for School Lighting,* page 25, *Abbreviations for Scientific and Engineering Terms,* page 27, Volume 4, Number 1, January, 1933, *Industrial Standardization,* the monthly review of the American Standards Association, 29 West 39th Street, New York.

The listed articles will be found to contain information of general interest to those who follow the standardization movement. Those engaged in technical work will find in the Journal much specific material on various fields.

Books Received

The Availability of Bank Credit. By the National Industrial Conference Board, Inc., New York, 1932, pages xiv, 146. ($3.00)

British Experience with Unemployment Insurance. Part Two, Monograph Eight, in a series on Social Insurance, 1932, pages 50; *Employee Handbooks.* By the Policyholders Service Bureau, pages 20; *Methods of Organizing and Conducting Industrial Safety Contests.* By the Policyholders Service Bureau, pages 20, Metropolitan Life Insurance Company, New York.

**Cause and Control of the Business Cycle.* By E. C. Harwood, Financial Publishing Company, Boston, 1932, pages xiii, 165. ($2.00)

An Essay on the Nature and Significance of Economic Science. By Lionel Robbins, Macmillan & Co., Limited, London, 1932, pages xii, 141.

**Ethics and Modern Business.* By Henry S. Dennison, Houghton Mifflin Company, Boston and New York, 1932, pages 68. ($1.00)

The History of the Quaker Oats Company. By Harrison John Thornton, The University of Chicago Press, Chicago, 1933, pages xi, 279. ($3.00)

**Individualism—An American Way of Life.* By Horace M. Kallen, Liveright, Inc., New York, 1932, pages x, 241. ($2.00)

**Introduction to Technocracy.* By Howard Scott and others. The John Day Company, Inc., New York, 1933, pages 61. ($.90)

**The Modern Corporation and Private Property.* By Adolf A. Berle, Jr., and Gardiner C. Means, Commerce Clearing House, Inc., New York, Chicago and Washington, 1932, pages xiii, 396. ($4.50)

**An Outline of Technocracy.* By Wayne W. Parrish, Farrar & Rinehart, Inc., New York, 1933, pages xii, 242. ($2.50)

The Personal Finance Business. By M. R. Neifeld, Harper & Brothers, New York and London, 1933, pages xviii, 490. ($5.00)

**Prices.* By George F. Warren and Frank A. Pearson, John Wiley & Sons, Inc., New York, 1933, pages vi, 386. ($3.90)

**Readings in Economic Planning.* By J. George Frederick, The Business Bourse, New York, 1932, pages xiv, 359. ($3.50)

**Recent Social Trends in the United States* (2 vols.) Report of the President's Research Committee on Social Trends, McGraw-Hill Book Company, Inc., New York and London, 1933, pages xcv, 1568.

Trend of Business—Yesterday-Today-Tomorrow. By Arthur B. Adams, Harper & Brothers, New York and London, 1932, pages x, 93. ($1.00)

Unemployment Insurance and Relief in Germany. By the National Industrial Conference Board, Inc., New York, 1932, pages xvi, 107. ($2.00)

Objects of the Taylor Society Incorporated

The objects of this Society are, through research, discussion, publication and other appropriate means:

1. To secure—for the common benefit of the community, the worker, the manager and the employer—understanding and intelligent direction of the principles of administration and management which govern organized effort for accomplishing industrial and other social purposes.

2. To secure the gradual elimination of unnecessary effort and of unduly burdensome toil in the accomplishment of the work of the world.

3. To promote the scientific study and teaching of the principles governing organized effort, and of the mechanisms of their adaptations and application under varying and changing conditions.

4. To promote general recognition of the fact that the evaluation and application of these principles and mechanisms are the mutual concern of the community, the worker, the manager and the employer.

5. To inspire in labor, manager and employer a constant adherence to the highest ethical conception of their individual and collective responsibility.

Membership

Membership in the Taylor Society may be either individual or firm. The following is a statement of membership classes. The fees and dues for members in other countries than the United States are one-half of those specified. The exception is the organized branch which is permitted to remit one-quarter of the regular fees for each of its individual or firm members. Application for membership should be made on a regular form which may be secured from the Society. New members may be elected directly to the grades marked*.

1. **Member*: An individual interested in the development of the science and the art of management as engineer, executive, operative, scientist, investigator or teacher. Minimum age 28. Initiation Fee. $15. Annual dues including subscription to the Bulletin, $20.

2. **Junior Member*: A younger member. A Junior Member may become a Member without payment of additional initiation fee at 28 years of age and must change to Member at 30 years. Initiation Fee, $5. Annual dues including subscription to the Bulletin, $10.
   For any of the above grades a person engaged in educational work, state service, government service or the service of any other non-commercial enterprise of an eleemosynary nature shall pay one-half the initiation fee and one-half the annual dues of the grade to which elected.

3. *Honorary Member*: A member elected by the Board of Directors for exceptionally distinguished service in the advancement of the science and the art of management.

4. **Life Member*: Any member who has prepaid all dues by the payment of $500.

5. **Firm Member*: A firm or organization interested in the advancement of the science and the art of management which desires to make the service of the Society available to members of its organization. A firm member designates two representatives (who may be changed from time to time at the organization's discretion) who have all the rights and privileges of membership except the right to vote and to hold office. Annual dues, including two subscriptions to the Bulletin, $40.

6. **Contributing Member*: Any individual, firm or organization desiring to promote the work of the Society by an annual contribution of $100 or more. A contributing member has all the privileges of personal or firm membership, as the case may be, including one subscription to the Bulletin for each $20 contributed.

7. **Student Associate*: A regularly enrolled student of management in any school of engineering, business administration, commerce or arts, of collegiate rank, or a graduate of such institution who has applied for membership not later than one year after graduation, elected upon recommendation of the instructor in charge of management courses. A Student Associate may become a Junior Member, without payment of initiation fee, any time after graduation and must become a Junior Member at the age of 25. Annual dues including subscription to the Bulletin, $3.

All dues are payable in advance, either annually or in semi-annual instalments. The fiscal year is November 1 to October 31. Members elected other than at the beginning of the fiscal year are charged pro rata (quarterly) for the first year.